

Biospheric Sciences Branch Highlights
Code 614.4
July – August 2006

● **SCIENCE POLICY MEETINGS, SCIENCE TEAM MEETINGS, WORKSHOPS**

**** NASA Biodiversity, Terrestrial Ecology, and Applied Sciences Joint Science Workshop held at University of Maryland**

NASA HQ Carbon Cycle and Terrestrial Ecosystems and Applied Sciences Programs sponsored a workshop at the University of Maryland College Park on August 21-25. The NASA Biodiversity, Terrestrial Ecology, and Applied Sciences Joint Science Workshop (JSW) was a highly successful meeting aimed at encouraging information exchange, exposing funded researchers to NASA's program activities and future plans, receiving input from workshop participants on program content and future plans, and fostering interactions among researchers and, especially, between the research and applied sciences elements of the program.

The workshop consisted of 4 days each composed of a half day of overview presentations in plenary venue and a half day of breakout sessions for discussions of program elements. Each day poster sessions were conducted that paralleled the presentation and breakout themes of the day. The final 5th day (1/2 day) was devoted to plenary presentations and discussions of the past and future of the program. An overview report of the workshop is currently being drafted for general distribution. Biospheric Sciences staff (Collatz, Masek) and contractors provided support for the workshop.

Further information about the workshop agenda, participants and poster abstracts can be obtained at:

http://cceo.gsfc.nasa.gov/meeting_2006/index.html

**** New LBA agreement signed during the first meeting of the U.S.- Brazil Ministerial Level Joint Commission on Scientific and Technological Cooperation held in Washington D.C., July 21, 2006**

Participants in the meeting represented ministries and institutions of science and technology of both countries. The event was held under the U.S. and Brazil 1984 Agreement about Cooperation in Science and Technology (amended and expanded in 1994), and according to guidelines from Presidents Lula and Bush as published in a joint communication during their meeting in Brasilia, in November 2005.

The U.S.-Brazil Ministerial Level Joint Commission reviewed the current cooperation in science and technology between the two countries and pointed out the significant advances that the cooperation produced to the development of scientific research, the establishment of work contacts among researchers, and to the tangible/visible benefits to society. These benefits, the Commission observed, are not limited to Brazil and the United States, but are extensive to other countries as well.

The cooperation between Brazil and the United States allowed for a better understanding of earth climate, improvement of meteorological forecast, helped the coordination of infectious diseases, standardized meteorological patterns and contributed to hard science research in a large variety of fields. Brazil and the United States agreed on searching new forms to develop existing programs, to promote seminars about various themes, and to discuss new avenues for the cooperation. Potential fields include information technology and communications, biotechnology, agriculture, energy, public health and Earth observation. Both parties agreed on promoting new technical meetings to explore these themes.

Both countries agreed that the organization of this first meeting of the U.S.-Brazil Ministerial Level Joint Commission on Scientific and Technological Cooperation opens new and promising chapters for dialogue and cooperation between the countries.

**** Ranson attends International Boreal Forest Research Association meeting in Sweden**

After his Siberia Forest Study field work in Russia, Jon Ranson attended the 13th International Boreal Forest Research Association meeting in Umea, Sweden where he presented results on using MODIS for large area insect outbreak monitoring.

• FUNDED RESEARCH

**** Siberia Forest Study conducted by Ranson and Kimes**

Jon Ranson and Dan Kimes traveled to Russia during August 13-28. Discussions regarding two NASA supported projects " Boreal Zone Forest Type and Structure From EOS Data Sets, (K.J. Ranson, PI) " and "Forest Structure Measures from GLAS Lidar and MISR Multiangle Spectral Data" (D.S. Kimes, PI) were held with collaborators at the Sukachev Institute of Forests in Krasnoyarsk in central Siberia. An 8-day field trip was made to acquire forest structure measurements for several GLAS footprint locations in an area of mixed taiga forest.

**** Paper published in IEEE Transactions of Geoscience and Remote Sensing by 614.4 members: Jeff Masek, Feng Gao, and Forest Hall.**

Gao, F., J. Masek, M. Schwaller, and F. Hall, On the blending of Landsat and MODIS surface reflectance: Predicting daily Landsat surface reflectance, IEEE Trans. Geosci. Remote Sens., 44, 2207-2218.

**** Drs L. Bounoua and J. Masek demonstrate that accuracy of modeled land surface climate parameters is better achieved using high resolution satellite data**

Drs L. Bounoua and J. Masek from 614.4 have published interesting results demonstrating that the accuracy of modeled land surface climate parameters is better achieved using high resolution satellite data. They show that significant uncertainties may result from numerical models if fed with inappropriate input data. Dr. Y. Tourre from the Lamont-Doherty Earth Observatory (University of Columbia) participated in this work.

"Sensitivity of Surface Climate to Land Surface Parameters: A Case Study using the Simple Biosphere Model-SiB2", L. Bounoua, J.G. Masek and Y. Tourre (2006), JGR, (In press).

**** Dr. Bounoua collaborates with researchers from the University of Maryland and international scientists from Germany and Brazil**

Dr. Bounoua (Code 614.4), collaborating with researchers from the University of Maryland and international scientists from Germany and Brazil, published results showing the impact of land cover change on the surface energy and water budgets in Mato Grosso, Brazil, an area with rapid deforestation rates. These results showed that the effect of deforestation on local climate depends not only on the overall extent of clearing but also on the subsequent type of land use. Simulated results indicate that initial clearing of tall forests to bare ground increases temperature at the canopy level. However, subsequent use of the land for pasture or cropland reduces this warming.

"The impact of land cover change on surface energy and water balance in Mato Grosso, Brazil"; J. Pongratz, L. Bounoua, R. DeFries, D. Morton, L. Anderson, W. Mauser, C. Klink (2006), Earth Interactions (in press).

• SIGNIFICANT ACTIVITIES

**** Jon Ranson and Jeff Masek selected to receive New Business Capture Awards**

Jon Ranson, Branch Head for 614.4, was selected to receive the 2005 New Business Capture Award for the Terra Senior Review. Jeff Masek was selected to receive the 2006 New Business Capture Award. The background for this award follows:

Vital to the health of the Goddard Space Flight Center is the new business captured for our workforce through competitive proposal opportunities. These proposals bring exciting and challenging new work to the Center, covering the gamut from a few thousand dollars for scientific research and technology development to the implementation of space flight missions worth hundreds of millions to the Center in revenue. Competing with and against proposals submitted to NASA HQ from experienced and diverse industry, academia, and government teams, capturing new business represents a very challenging task that consumes those involved because there is so much at stake. This award recognizes those individuals who successfully captured significant new business for the center in Fiscal Year 2005. These award

winners through their exhaustive efforts exemplified professional dedication and creativity, developed benchmark-quality mission concepts and award-winning proposals that provided NASA HQ with unquestionable justification for selecting the Goddard Space Flight Center to implement these exciting and challenging new endeavors.

**** Ivani Periera of the the LBA Project Office teaches course on technical writing to students participating in the LBA project in Palmas, Tocantins, Brazil**

The 30-hour course with a total of 25 students presented a theoretical approach in writing techniques based on the functional textual grammar model. Students were also engaged in hands-on writing activities of dissertations, articles and reviews based on their ongoing projects in environmental, remote sensing and modeling studies. A written communication from Dr. Laura Borma, LBA Researcher and Regional Coordinator, on September 1 notes: "the quality of recent articles and reports that students have been producing has improved substantially. This certainly shows the positive impact of this training." In addition, Dr. Laura Borma formally invited Ms. Periera to offer another course to a group of 20 Masters students in environmental sciences at the Federal University of Tocantins. This is a new Masters Program, which was implemented three years ago. The federal government will review the course, and its effectiveness is also measured through the quality of the students' publications. As Dr. Borma stated, "certainly, good quality writing plays a crucial role in this process".